

We claim:

1. A method of treating a stenosis or restenosis in a coronary blood vessel comprising the steps of:

implanting a stent within the coronary blood vessel; and

5 injecting a therapeutic agent comprising an anti-restenosis agent into the myocardium proximate the coronary blood vessel.

2. The method of claim 1 further comprising the steps of:

10 injecting the therapeutic agent into the myocardium from an endocardial space of the heart.

3. The method of claim 1 further comprising the steps of:

injecting the therapeutic agent peri-adventitially through the blood vessel wall.

4. The method of claim 1 further comprising the step of:

15 injecting the therapeutic agent peri-adventitially through a coronary vein or coronary sinus.

5. The method of claim 1, 2, 3 or 4 further comprising the steps of:

20 injecting the therapeutic agent at a site distal to the stent.

6. The method of claim 1, 2, 3 or 4 further comprising the steps of:

25 selecting the anti-restenosis agent from the group comprising anti-oxidant drugs, anti-inflammatory drugs, anti-neoplastic agents, anti-angiogenic agents and gene therapy agents.

7. The method of claim 1, 2, 3 or 4 further comprising the step of:

providing the therapeutic agent in a time release formulation.

5 8. The method of claim 1, 2, 3 or 4 further comprising the step of:

providing the therapeutic agent in a microsphere formulation.

9. The method of claim 1, 2, 3 or 4 further comprising the step of:

10 providing the therapeutic agent in a formulation in which the therapeutic agent is encapsulated in micelles.

10. The method of claim 1, 2, 3 or 4 further comprising the step of:

15 providing the therapeutic agent in a formulation in which the therapeutic agent is encapsulated in liposomes.

11. A method of treating a stenosis or restenosis in a coronary blood vessel comprising the steps of:

performing an angioplasty procedure within the coronary blood vessel; and

20 injecting a therapeutic agent comprising an anti-restenosis agent into the myocardium proximate the coronary blood vessel.

12. The method of claim 11 further comprising the steps of:

25 injecting the therapeutic agent into the myocardium from an endocardial space of the heart.

13. The method of claim 11 further comprising the steps of:

injecting the therapeutic agent peri-adventitially through the blood vessel wall.

14. The method of claim 11 further comprising the step of:

5 injecting the therapeutic agent peri-adventitially through a coronary vein or coronary sinus.

15. The method of claim 11, 12, 13 or 14 further comprising the steps of:

injecting the therapeutic agent at a site distal to the site of angioplasty.

10 16. The method of claim 11, 12, 13 or 14 further comprising the steps of:

15 selecting the anti-restenosis agent from the group comprising anti-oxidant drugs, anti-inflammatory drugs, anti-neoplastic agents, anti-angiogenic agents and gene therapy agents.

17. The method of claim 11, 12, 13 or 14 further comprising the step of:

providing the therapeutic agent in a time release formulation.

20 18. The method of claim 11, 12, 13 or 14 further comprising the step of:

providing the therapeutic agent in a microsphere formulation.

19. The method of claim 11, 12, 13 or 14 further comprising the step of:

25 providing the therapeutic agent in a formulation in which the therapeutic agent is encapsulated in micelles.

20. The method of claim 11, 12, 13 or 14 further comprising the step of:

providing the therapeutic agent in a formulation in which the therapeutic agent is encapsulated in liposomes.

5 21. A method of treating a segment of a coronary blood vessel comprising the steps of:

injecting a therapeutic agent comprising an anti-restenosis agent into the myocardium proximate the coronary blood vessel.

10 22. The method of claim 21 further comprising the steps of:

injecting the therapeutic agent into the myocardium from an endocardial space of the heart.

23. The method of claim 21 further comprising the steps of:

15 injecting the therapeutic agent peri-adventitiously through the blood vessel wall.

24. The method of claim 21 further comprising the step of:

injecting the therapeutic agent peri-adventitiously through a coronary vein or coronary sinus.

20 25. The method of claim 21, 22, 23 or 24 further comprising the steps of:

injecting the therapeutic agent at a site distal to the segment to be treated.

26. The method of claim 21, 22, 23 or 24 further comprising the steps of:

25 selecting the anti-restenosis agent from the group comprising anti-oxidant drugs, anti-inflammatory drugs, anti-

neoplastic agents, anti-angiogenic agents and gene therapy agents.

27. The method of claim 21, 22, 23 or 24 further comprising the step of:

5 providing the therapeutic agent in a time release formulation.

28. The method of claim 21, 22, 23 or 24 further comprising the step of:

providing the therapeutic agent in a microsphere formulation.

10 29. The method of claim 21, 22, 23 or 24 further comprising the step of:

providing the therapeutic agent in a formulation in which the therapeutic agent is encapsulated in micelles.

15 30. The method of claim 21, 22, 23 or 24 further comprising the step of:

providing the therapeutic agent in a formulation in which the therapeutic agent is encapsulated in liposomes.

31. A method of treating intraluminal disease of a coronary blood vessel comprising the steps of:

20 injecting a therapeutic agent into the myocardium proximate the coronary blood vessel.

32. The method of claim 31 further comprising the steps of:

injecting the therapeutic agent into the myocardium from an endocardial space of the heart.

25 33. The method of claim 31 further comprising the steps of:

injecting the therapeutic agent peri-adventitially through the blood vessel wall.

34. The method of claim 31 further comprising the step of:

injecting the therapeutic agent peri-adventitiously through a coronary vein or coronary sinus.

35. The method of claim 31, 32, 33 or 34 further comprising the  
5 steps of:

injecting the therapeutic agent at a site distal to the segment to be treated.

36. The method of claim 31, 32, 33 or 34 further comprising the steps of:

10 selecting the therapeutic agent from the group comprising anti-oxidant drugs, anti-inflammatory drugs, anti-neoplastic agents, anti-angiogenic agents and gene therapy agents.

37. The method of claim 31, 32, 33 or 34 further comprising the  
15 step of:

providing the therapeutic agent in a time release formulation.

38. The method of claim 31, 32, 33 or 34 further comprising the step of:

20 providing the therapeutic agent in a microsphere formulation.

39. The method of claim 31, 32, 33 or 34 further comprising the step of:

providing the therapeutic agent in a formulation in which the therapeutic agent is encapsulated in micelles.

25 40. The method of claim 31, 32, 33 or 34 further comprising the step of:

providing the therapeutic agent in a formulation in which the therapeutic agent is encapsulated in liposomes.

41. A kit for delivering a therapeutic agent to a patient suffering from vascular disease characterized by a diseased

5 treatment region in a blood vessel, said kit comprising:

a catheter having means for introducing a therapeutic agent into in a perivascular space surrounding the blood vessel; and

10 a dose of therapeutic agent suitable for introduction into the perivascular space surrounding the blood vessel through the catheter;

instructions for use of the catheter according to the following method:

15 positioning the means for introducing into the perivascular space; and

delivering an dose of the therapeutic agent into the perivascular space near the diseased treatment region.